Pekhodnyy, I.K.

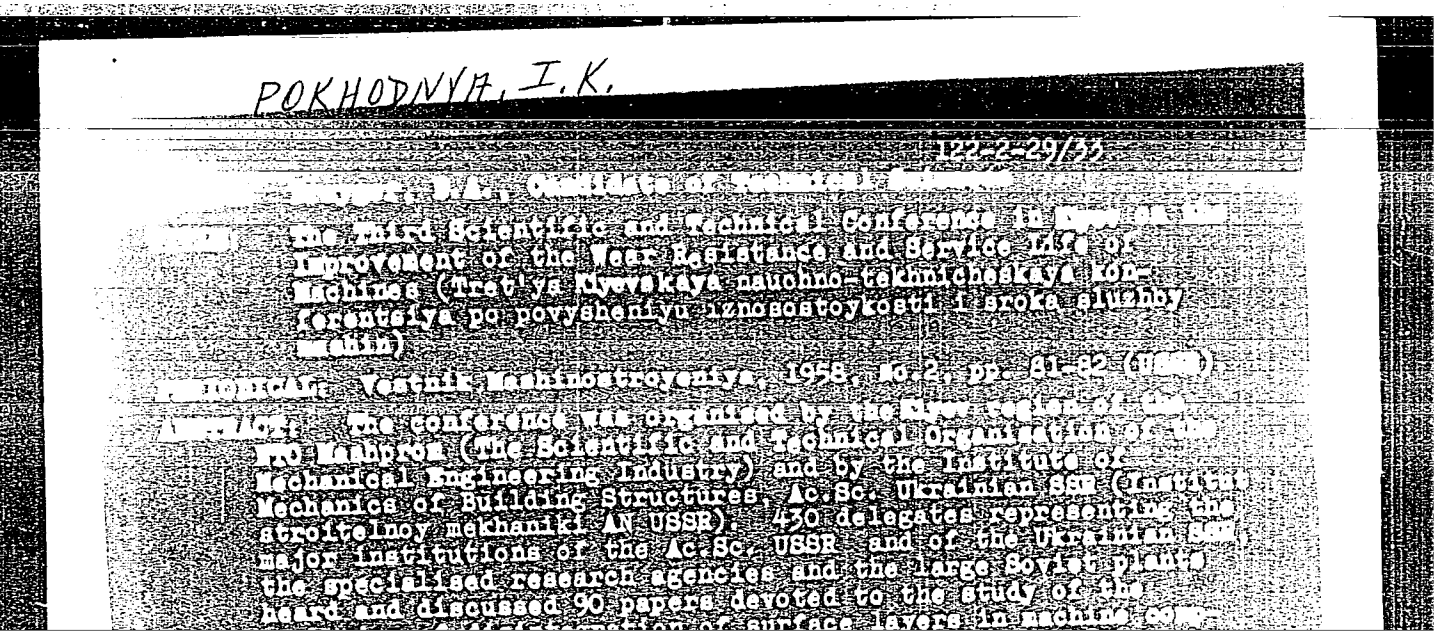
Distr: 4E2c

Wire for Welding Wear-resisting Steels in a Medium of CO_2. I. K. Pokhodnya. (Avtom. Svarka, 1957, (3), 51–54). (In Russian). The composition of electrode rod for welding steels P18, 9X2B8, and X12B2 has been worked out. The welding of high-carbon wear resisting steels proceeds conveniently with the aid of a powder wire electrode. The loss of electrode material from coal gas and from spray can be minimized by introducing [illegible]. The composition of the powder wire. [illegible]

POKHODNYA, I.K., kandidat tekhnicheskikh nauk.

Wire for hard facing wear-resistant steels in an atmosphere of carbon dioxide. Avtom.svar. 10 no.3:51-54 My-Je '57.
(MLRA 10:8)

1.Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye.O. Patona, Akademii nauk USSR.
(Hard facing)
(Protective atmospheres)



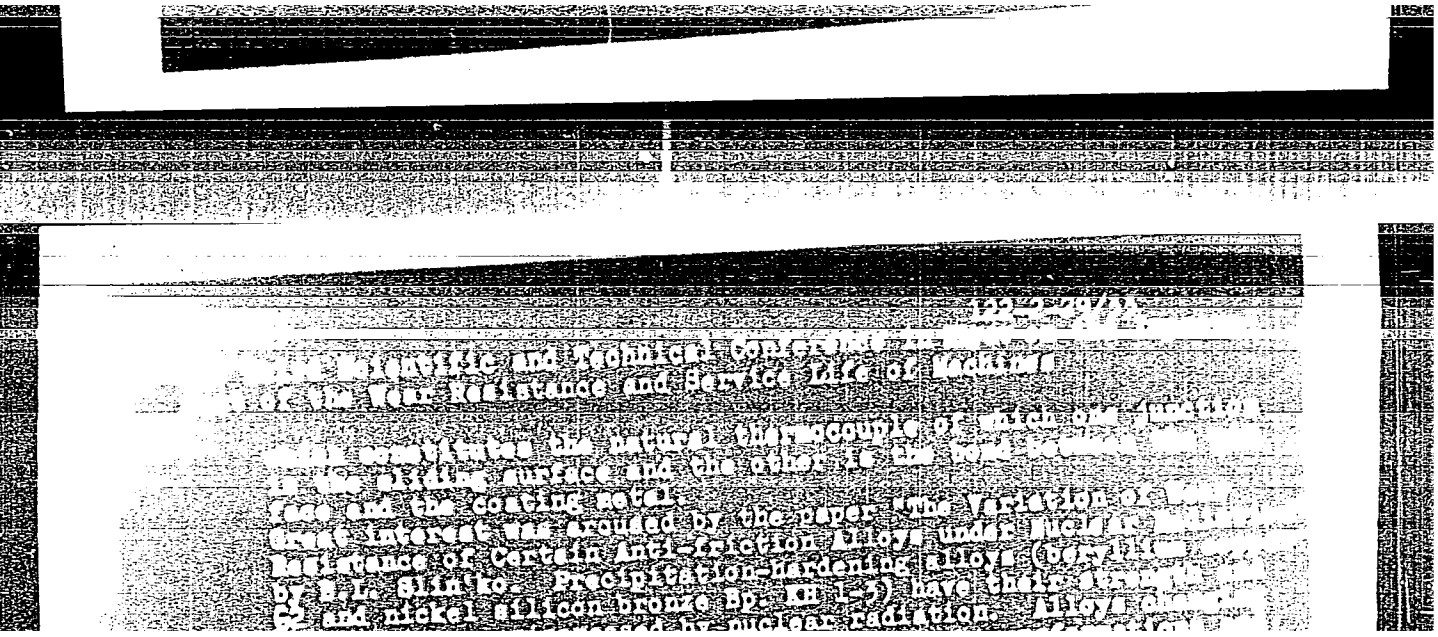
POKHODNYA, I.K.

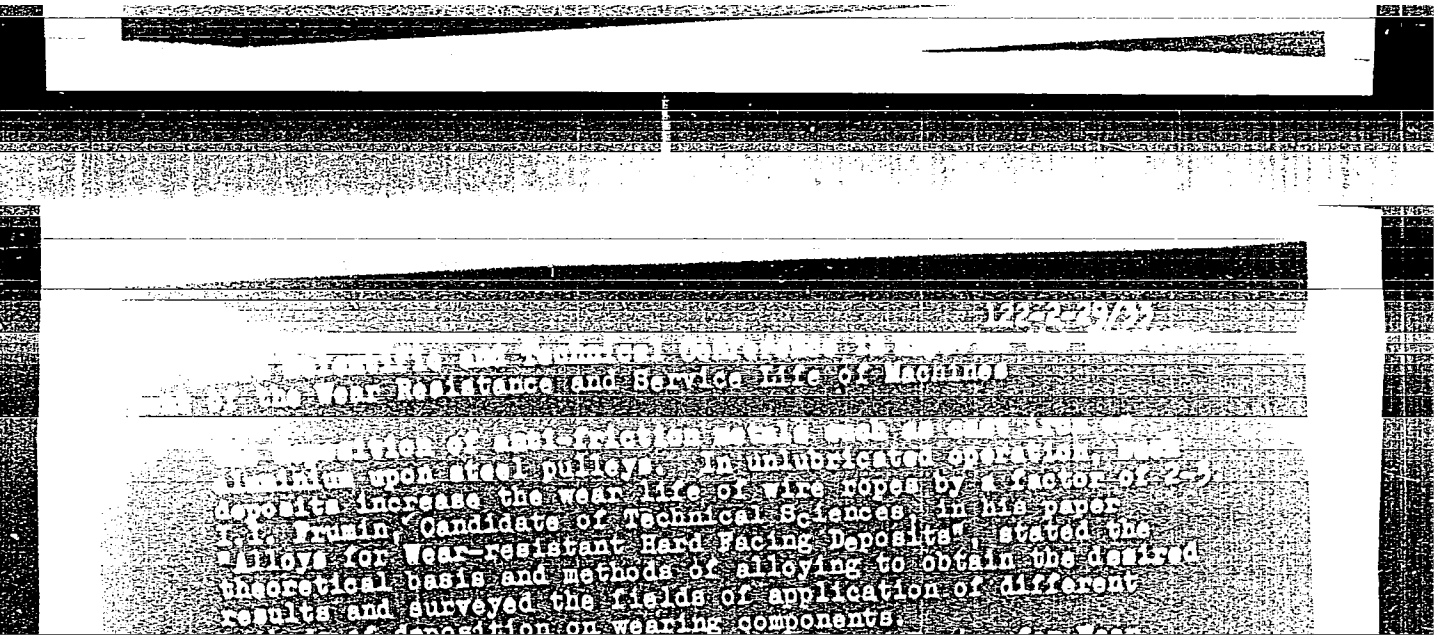
122-2-29/33

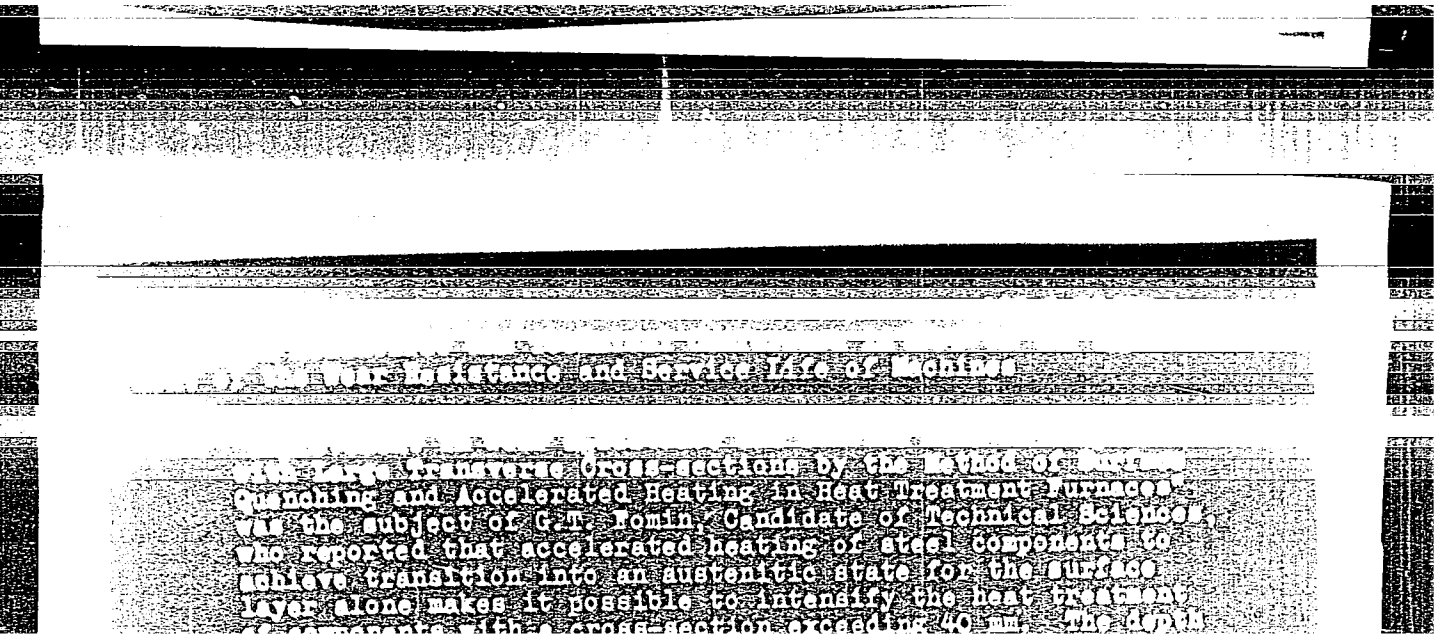
[illegible] Scientific and Technical Conference [illegible]
Improvement of the Near Resistance and Service Life of
Machines (Tret'ya Nyevvskaya nauchno-tekhnicheskaya kon-
frontsiya po povysheniyu iznosostoykosti i sroka sluzhby
mashin)

Vestnik Mashinostroyeniya, 1958, No 2, pp 81-82 (USSR)

[illegible] conference was organized by the Section [illegible]
pro Mashprom (the Scientific and Technical Organization of
Mechanical Engineering Industry) and by the Institute of
Mechanics of Building Structures, Ac.Sc. Ukrainian SSR (Institut
mekhaniki stroitel'noy mekhaniki AN USSR). 430 delegates representing the
major institutions of the Ac.Sc. USSR and of the Ukrainian SSR
the specialized research agencies and the large soviet plants
heard and discussed 90 papers devoted to the study of [illegible]
[illegible] surface layers in machine [illegible]







PoKHoDAYA, I.K.

25(1); 18(5) PHASE I BOOK EXPLOITATION SOV/2859

Akademiya nauk SSSR. Institut metallurgii

Goryachiye treshchiny v svarnykh soyedineniyakh slitkakh i otlivkakh (Hot Cracks in Welds, Ingots, and Castings) Moscow, Izd-vo AN SSSR, 1959. 165 p. 2,700 copies printed.

Ed.: N. N. Rykalin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: V. S. Rzheznikov; Tech. Ed.: Yu. V. Rylina.

PURPOSE: This book is intended for metallurgists and welding engineers.

COVERAGE: This is a collection of scientific papers dealing with the formation of hot cracks in ingots, castings, and welded products. Some papers are concerned mainly with the nature or mechanism of the phenomenon; others examine the effect of factors such as steelmaking procedure. Sufficient evidence is presented to identify some of the causes of hot cracks. Various means of investigating and preventing the phenomenon are described. A number of references, both Soviet and non-Soviet, accompany the papers. ~~For further coverage...~~

Medalya, P. N., Y. G. Gruzin, and Y. N. Saveyko. Formation and Prevention of Hot Cracks in Steel Castings 39

As a criterion for the quantitative determination of the resistance of steel to the formation of exterior hot cracks, the author finds it convenient to employ the concept of "crack resistance", or the force required to form a crack during the shrinkage of a standard cast specimen with rigidly fastened ends. For mild carbon steel and low-alloy (Cr, Mo, V) structural steel, pouring temperature is one of the most important factors in crack development. Filling the molds with steel at the temperature of the liquidus or below should be avoided. A direct relationship between crack resistance and linear shrinkage, fluidity, and gas liberation was established. Increasing the fluidity of the mushy stage by changing the composition or the conditions helps to increase the crack resistance. Sulfur, hydrogen, and methane decrease the crack resistance of steel. Additions of manganese, molybdenum, and vanadium to carbon steel or low alloy steel increase the crack resistance. The manganese content should be held at a maximum so as to assure a ratio of Mn/S $\leq$ 13.

Gulyayev, B. B., I. I. Lopyrev, and L. M. Postnov. Formation of Hot Cracks in Steel Castings 51

The author recommends the following measures for controlling hot cracks in steel castings: 1) decreasing the size of the casting and eliminating projections by casting in several pieces with subsequent welding of the components; 2) Equalization of the cooling rates of various parts of the casting and elimination of conjugate parts through a rational determination of the thickness of their elements; 3) increasing fillet radii; 4) rejection of X-shaped designs and conjugate walls at angles of less than 90°; 5) increasing the pliancy of molds through the use of more pliable molding media and by pitting the molds; 6) strengthening weak spots through the use of chills and ribbing; 7) regulating the metal composition, insofar as possible, and the pouring conditions so as to reduce the probability of crack development. Consistent application of these measures, the author states, will effectively prevent hot cracks from development. Consistent application of these measures, the author states, will effectively prevent hot cracks from developing.

Pokhodnya, I. K. Hot (Crystallization) Cracks in the Hard Facing of High-Carbon Low-Chrome Steels 68

The author discusses the nature and mechanism of hot-crack formation and examines various factors contributing to it (chemical composition of added metal, cooling rate, etc.).

Medovar, B. I. Hot Cracks in the Welding of Chrome-Nickel Austenitic Steels 92

PeKHoDNyA, I.K.

25(1) PHASE I BOOK EXPLOITATION SOV/3421

Akademiya nauk USSR, Kiyev, Institut elektrosvarki imeni akademika Ye.O. Patona

Peredovyye metody sposobov svarki v promyshlennosti. Vyp. 2 (Introduction of New Welding Methods in Industry; Collection of Articles, No. 2) Kiyev, Gos. izd-vo tekhn. lit-ry Ukrainskoy SSR, 1959. 134 p. Errata slip inserted. 3,000 copies printed.

Ed.: V. Ostrenko; Tech. Ed.: S. Matsevich.

PURPOSE: This book is intended for workers in the welding industry.

COVERAGE: The book contains a discussion of welding techniques and problems by groups of scientists and welders. Much attention is given to problems in the application of new methods of mechanized welding and electro-slag welding. This is the second collection of articles under the same title prepared and published by the Institut elektrosvarki imeni Ye.O. Patona (Institute of Electric Welding imeni Ye.O. Paton). The preface is written by B.Ye. Paton, Academician of the Ukrainian Academy of Sciences and Winner of the Lenin Prize. There are no references.

Ishchenko, A.S. (Engineer), Yu. A. Stavnichenko (Candidate of Technical Sciences), V. M. Kirichenko (Engineer; Institut elektrosvarki imeni Ye.O. Patona (Electric Welding Institute imeni Ye.O. Paton)), P. P. Antonets (Engineer, Zdanovskiy zavod imeni Il'icha (Plant imeni Il'ich in Zdanov)), V. I. Bakhvalov (Engineer; Barnaul'skiy kotel'nyy zavod (Barnaul Boiler Plant)), and V. V. Chernik (Engineer; Novokramatorskiy mashinostroitel'nyy zavod (Novokramatorsk Machinery Plant)). Electro-slag Welding of Steel-plate Constructions 17

Ishchenko, A. S. (Senior Engineer), A. M. Makara (Candidate of Technical Sciences), and I. V. Kovtun (Senior Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)). Making Bodies for Chemical Equipment by Electro-slag Welding of Medium-alloyed Steel Forgings 32

Medovar, B. I. (Candidate of Technical Sciences), A. K. Sofronitov (Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)), and I. V. Zapolonskiy (Head of Welding Department; Podol'skiy mashinostroitel'nyy zavod imeni S. O. Ordzhonikidze (Podol'sk Machinery Plant imeni S. O. Ordzhonikidze)). Electro-slag Welding of Large Flanges of 1Kh18N9T Austenitic Steel 51

Ovcharenko, S. M. (Candidate of Technical Sciences), V. P. Bubnovskiy (Senior Engineer), S. D. Zagrebnyuk (Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)), P. S. Shkabara (Electric Welding Institute imeni Ye. O. Paton), and V. P. Shevtsov (Technologist of a welding shop). Electro-slag Automatic Arc Welding of Medium and Large Thickness of Titanium 64

Pokhodnya, I. K. (Candidate of Technical Sciences), V. P. Bubnovskiy (Senior Engineer), I. I. Frumin (Candidate of Technical Sciences), Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)), and L. A. Volkova (Shop Foreman; Zaporozhskiy metallurgicheskiy zavod imeni G. I. Petrovskogo (Zaporozhstal Metallurgical Plant imeni G. I. Petrovskiy)). Ye. F. Gorelov (Shop Superintendent; Alchevskiy metallurgicheskiy zavod imeni E. Ye. Voroshilova (Alchevsk Metallurgical Plant imeni K. Ye. Voroshilov)), and S. A. Rybenko (Chief Mechanic, Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine)). Introduction of Automatic Hard-surfacing in the Metallurgical Industry 74

Ishkhanich, B. I., (Candidate of Technical Sciences), S. L. Mandel'berg (Candidate of Technical Sciences; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institut imeni Ye. O. Paton)) Z. O. Kyrshbaum (Candidate of Technical Sciences; Ukrainian Scientific and Research Institute of Pipe)), and S. A. Frikke (Chief Engineer; Chelyabinskiy trubo-prokatnyy zavod (Chelyabinsk Pipe-rolling Plant)). New Technique in Straight-seam Welding of Large-diameter Oil and Gas Pipes 95

Gorbunov, G. V. (Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)), K. A. Zaks, (Chief Engineer; Svarochno-montazhnyy trest (Welding and Assembling Trust)), and A. N. Yurchev (Chief of the Department of Gas Pipeline Construction; Glavgaz SSSR (Main Administration of the Gas Industry of the USSR)). Mechanized Methods of Welding in Pipeline Construction 108

Moravskiy, G. V. (Candidate of Technical Sciences, Winner of Lenin Prize; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)), Ya. Ya. Mayevskiy (Chief Engineer; Orgkhimneftesbyt (Ukrainian Main Administration for Petroleum Marketing)), and Ye. F. Martinson (Head of Construction and Assembly Administration No. 707 Trest 7, Ministerstvo stroitel'stva RSFSR (RSFSR Ministry of Construction, Trust 7)). Introduction of the Method for Welding in the Petroleum Industry 118

PATON, B.Ye., akademik, doktor tekhn.nauk, laureat Leninskoy premii; VOLOSHKEVICH, G.Z., kand.tekhn.nauk, laureat Leninskoy premii; OSTROVSKAYA, S.A., kand.tekhn.nauk; DUDKO, D.A., kand.tekhn.nauk; POKHODNYA, I.K., kand.tekhn.nauk; STERENBOGEN, Yu.A., kand.tekhn. nauk; RUBLEVSKIY, I.N., inzh.; ZHEMCHUZHNIKOV, G.V., kand.tekhn. nauk; ROZENBERG, O.O., inzh.; SEVBO, P.I., kand.tekhn.nauk; NOVIKOV, I.V., inzh.; MEDOVAR, B.I., kand.tekhn.nauk; DIDKOVSKIY, V.P., inzh.; RABKIN, D.M., kand.tekhn.nauk; TYAGUN-BELOUS, G.S., inzh.; ZARUBA, I.I., kand.tekhn.nauk, retsenzent; GREBEL'NIK, P.G., kand.tekhn.nauk, red.; TYNYANYY, G.D., red.

[Electric slag welding] Elektroshlakovaia svarka. Izd.2., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 409 p. (MIRA 13:4)

1. AN USSR (for Paton).
(Electric welding)

66566

~~18 (2, 3, 5)~~ 18.7200 SOV/125-59-11-1/22

AUTHORS: Pokhodnya, I.K., Candidate of Technical Sciences, and Suptel', A.M., Engineer

TITLE: Mechanized Welding with Open Arc and Powder Wire

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 11, pp 3-12 (USSR)

ABSTRACT: This article describes a method of mechanized welding by means of open arc without using shielding gases. The welding is performed by powder wire containing slag- and gas forming substances. Both alternating and direct current can be used. Mechanical properties of welds obtained satisfy all the claims of E 42 Type electrodes. When using shielded arc welding, argon, helium, carbon dioxide, mixture of argon with oxygen, nitrogen, steam, and other gases are applied. However, the inert gases are too expensive and are used only when welding high-alloy steel and non-ferrous metal; in other cases, carbon dioxide is, mostly applied. In this instance, the authors refer to the article by K.V. Lyubavskiy and N.M. Novozhilov, en-

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Mechanized Welding with Open Arc and Powder Wire

titled "Welding with Fusible Electrode in Carbon Dioxide Atmosphere", published in "Avtogennoye delo", Nr 1, 1953 [1]. The carbon dioxide shielded arc welding has a number of advantages. But, at the same time, it possesses obvious shortcomings, such as inadequate formation of seams when welding pieces of a medium or large size, formation of cracks in craters, etc. To eliminate these shortcomings, new methods of welding without the application of shielding gases were developed. Having mentioned several methods of open arc welding used abroad, the authors describe the results of research carried out in this field, in 1958-1959, in the Soviet Union. When selecting an appropriate powder electrode wire, the article by I.I. Frumin, entitled "Alloying of Surfacing Metal when Using Submerged-Arc Welding", published by "Avtomaticheskaya svarka", Nr 1, 1952 [5] was considered. A drawn tubular powder wire was chosen. Materials for making it were: low-carbon cold-rolled tape, slag- and gas for-

Mechanized Welding with Open Arc and Powder Wire

ming substances, ferro-alloys and iron powder; its optimum diameter was 2.8-3 mm. Chemical composition of the base metal used is given in Table 1. Welding of butts 12 mm in thickness was done with 3 layers; 16 mm thick butts were welded with 4-5 layers. Direct current intensity used for welding was 230-250 amp.; arc voltage - 20-21 v; wire electrode feed speed - 84 m/hour. Figs 1, 2 and 3 show structure of welds obtained. Chemical composition of the third metal layer was: 0.10% C; 0.74% Mn; 0.14% Si; 0.017% N; 0.035% S; 0.039% P. Results of mechanical tests of seams welded by wire, Type PP-AN1, are given in Table 2. Graph 4 shows dependence of the weld metal toughness on the temperature. Dependence of impact resistance on the temperature is given in Fig 5. The authors give further data on welding with powder wire: Conditions of testing and characteristic of fusion (Table 3); cost price of materials used (Table 4); technical-economical indexes comparing different methods of welding (Ta-

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Mechanized Welding with Open Arc and Powder Wire

ble 5). The cost of 1 kg of weld metal received by using powder wire is about the same as when carbon dioxide shielded arc welding is used; it is by 1.8-3 times lower than is the case when hand welding with electrodes TsM-7 and UONI-13/45 is applied. There are 2 graphs, 5 tables, 6 photographs and 7 references, 3 of which are Soviet, 2 English, 1 French and 1 German.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye. O. Patona AN USSR (Order of the Red Banner of Labor Institute of Electric Welding imeni Ye. O. Paton, AS UkrSSR)

SUBMITTED: August 6, 1959

Card 4/4

PHASE I BOOK EXPLOITATION SOV/5078

Akademiya nauk URSR, Kiyev. Instytut elektrozvaryuvannya

Vnedreniye novykh sposobov svarki v proizvodstvennost'; sbornik statey. Vyp. 3. (Introduction of New Welding Methods in Industry; Collection of Articles. v. 3) Kiyev, Gos. izd-vo tekhn. lit-ry UkrSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni akademika Ye. O. Patona Akademii nauk Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusevich.

PURPOSE: This collection of articles is intended for personnel in the welding industry.

COVERAGE: The articles deal with the combined experiences of the Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton) and several industrial enterprises in solving scientific and engineering problems in welding technology. Problems in the application of new methods of mechanized welding and electroslag welding in industry are discussed. This is the third collection of articles published under the same title. The Foreword was written by B. Ye. Paton, Academician of the Academy of Sciences Ukrainian SSR and Lenin prize winner. There are no references.

TABLE OF CONTENTS:

PATON, B. Ye.; POKHODNYA, I.K.

Welding techniques in Great Britain. Avtom. svar. 14 no.6:75-92 Je '61. (MIRA 14:5)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye. O. Patona AN USSR.
(Great Britain—Welding)

S/125/61/000/006/010/010
D040/D112

AUTHORS: Pokhodnya, I. K., Kulish, R. M.

TITLE: At the Welding Materials Commission

PERIODICAL: Avtomaticheskaya svarka, 14, no. 6, 1961, 95-96

TEXT: Brief information is given on a newly-organized permanent Welding Materials Commission at the Institut elektrosvarki im. Ye. O. Patona (Electric Welding Institute im. Ye. O. Paton), its functions, and its first session. The Institute is leading in the welding branch in the Soviet Union. It has two Sub-Commissions: one dealing with electrodes for manual welding and surfacing, the other with materials for machine welding and surfacing. The Commission's functions are: a) Determining the welding materials requirements for the USSR economic regions and branches of industry; providing data for production planning; b) Examining the quality of materials produced by the industry; certifying quality; giving recommendations to stop the output of obsolete low-quality materials; c) Organizing tests for new materials; d) Supervising the construction and equipment of new plants and shops for the production of welding materials; e) Assisting materials standardization; f) Giving recommendations for centralized production. The first session in

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S/125/61/000/006/010/010
D040/D112

At the Welding Materials Commission

February 1961 was attended by specialists from industrial plants, research and planning organizations and sovnarkhozes, and scientists. Candidate of Technical Sciences I. K. Pokhodnya (Electric Welding Institute im.Ye.O.Paton) presented a report on "Production of welding materials in Gr. Britain" (summary report of his mission to Gr. Britain). The work plan for 1961 was considered and approved, and the following reports heard and discussed: by Engineer T. Ye. Mikhalevskiy (of "Giprometiz") - "Draft standard plan for electrode shop with 25,000 ton annual output"; Engineer M. F. Khrobastov (TsNIITMASh) - "Pilot unit of a high-production electrode-coating machine with 18-20 ton/shift capacity"; Engineer A. S. Varshavskiy (OKB "Elektropech'", Moscow) - "High-production conveyer furnaces for drying and roasting electrodes, with 10-20 ton/shift capacity"; Engineer E. P. Lugovoy (SKB-9, Rostov Sovnarkhoz) - "High-production machines for straightening and cutting electrode wire"; Engineer A. A. Gustov - "A rotor line for production of welding electrodes". The submitted projects were considered by work groups of experts. The "Giprometiz" draft plan was criticized in part, and it was recommended to consider this criticism in further planning of electrode shops for 25 and 60,000 tons annual output. The electrode-coating set of TsNIITMASh is being assembled at the Opytno-svarochnyy zavod Mosgorsovnarkhoza (Experimental-Welding Plant of the Moscow City Sovnarkhoz). The novelty

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At the Welding Materials Commission

of the set was appreciated and it was recommended to test it in 1961 at the Odesskiy zavod im. Dzerzhinskogo (Odessa Plant im. Dzerzhinskiy), but some serious faults in its design were pointed out, and the Subcommission recommended TsNIITMASh and OSZ to continue work and simplify and improve design, as well as reduce its weight and size. The ОКБ-463А (OKB-463A) and ОКБ-463Б (OKB-463B) drying-roasting furnaces of OKB-"Elektropech'" are used, but they are not free from faults and too few of them have been produced. The faults committed in the "OKB-463A" had been repeated in the 3-ton "OKB-830" furnace. Urgent design improvements and tests under conditions of prolonged operation were recommended. The Subcommission concluded that designing and research work is necessary for improvement of conveyer furnaces. Some design changes were considered necessary in the ИАО-32 (IAO-32) machine for straightening and cutting wire before starting series output. Another design of SKB-9 was criticized - ИО-34 (IO-34) for straightening and cutting steel, copper and aluminum wire. It was found only suitable for low-carbon steel and series output of this machine was not advised. The application of ЦМ-7 (TsM-7) electrodes was discussed in view of protests from sanitation and labor protection authorities. It was decided that iron powder can be used to coat these electrodes in order to reduce

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At the Welding Materials Commission

the toxicity and raise the work productivity. The Electric Welding Institute was advised to test different high-production electrodes to replace the Ts-M7 grade. As iron powder is scarce, the Electric Welding Institute, TsNIITMASh, VNIIST and "Promstal'konstruktsiya" will have to develop low-toxicity electrodes suitable for high current and having not much iron powder in the coating. The Commission decided to apply at the Committee of Standards for raising the standard no-load voltage of welding transformers in view of the higher no-load voltage needed for high-production electrodes. Powder iron produced by the Sulinskiy metallurgicheskiy zavod (Sulin Metallurgical Plant) was stated to have a very unstable chemical composition and to frequently have high contents of carbon, sulfur and phosphorus. It is therefore not suitable for electrodes. Powder iron produced by a process developed at the Institut metallokeramiki i spetssplavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR) meets the requirements best.

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22955
S/125/61/000/007/011/013
D040/D113

1-2300

AUTHORS: Pokhodnya, I.K. and Shlepakov, V.N.

TITLE: Powder wire with basic core for semiautomatic open air arc welding

PERIODICAL: Avtomaticheskaya svarka, no. 7, 1961, 87-88

TEXT: The Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O. Paton) in 1959 developed a new open air arc welding process using a powder wire electrode. This ПП-АН1 (PP-AN1) wire contained elements producing shielding slag and gas in the arc gap. The weld metal had mechanical properties corresponding to a weld metal produced by Э-42(E-42) and Э-46 (E-46) electrodes ГОСТ 9467-60 (GOST 9467-60). Further experiments at the Institute led to the development of a ПП-АН 2(PP-AN2) powder wire that produces metal corresponding to the specifications for Э-50А (E-50A) electrodes, i.e. high mechanical properties for critical joints. The PP-AN2 wire is used for welding carbon steel with reversed polarity d.c. Wire from 1.2 up to 2.0 mm in diameter can be used in any position, and wire from 0.2 to 3.0 mm mainly for bottom or inclined welds. Welds are well

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Powder wire with basic .....

shaped, the slag crust separates easily, spatter is only slight and the arc is steady. An important advantage is high welding speed and high welding current. The fusion rate of 3.0 mm wire at 320 amp is 16.5 g/amp-hr, and at 490 amp it is 22.3 g/amp-hr. The high welding properties and productivity of the wire are reached owing to the new $MgCO_3$ - CaF_2 - SiO_2 slag system. This system can also be used for electrode coating. Welding was carried out using an A-537 (A-537) semiautomatic machine fitted with a special hose and wire holder. A ПС-500 (PS-500) generator was used for 3 mm wire, and a 3П7,5/30 (3P7.5/30)generator for 1.6 mm wire. The percentage composition of the elements in the weld metal was as follows: 0.07-0.09 C, 0.55-0.60 Mn, 0.15-0.20 Si, $<$0.025 S, $<$0.025 P, and $<$0.025 N_2. In conclusion, the authors state that the wide application of the new wire will considerably rationalize welding operations. [Abstracter's note: Essentially complete translation]. There are 1 table and 1 Soviet-bloc reference.

Card 2/2

POKHODNYA, I.K.; MARCHENKO, A.Ye.; BEYNISH, A.M.

High performance electrodes with iron powder in the coating.
Avtom. svar. 14 no.10:52-68 O '61. (MIRA 14:9)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye.O. Patona AN USSR.
(Electrodes) (Metal powders)

BEYNISH, A.M.; POKHODNYA, I.K.; BABENKO, V.F.

Rapid drying of heavily coated electrodes. Avtom. svar. 16 no.1:87-89 Ja '63. (MIRA 16:2)

1. Institut elektrosvarki imeni Ye.O. Patona AN UkrSSR.
(Electrodes)
(Kilns)

L 28481-66 EWP(k)/EWT(m)/ETC(f)/EWG(m)/T/EWA(d)/EWP(v)/EWP(t)/ETI IJP(c) JD/HM/DG

ACC NR: AP6010143 (A) SOURCE CODE: UR/0125/66/000/003/0050/0052

AUTHOR: Pokhodnya, I. K.; Golovko, V. N.

ORG: Institute of Electric Welding im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: Powdered-metal electrode for CO_2-shielded welding of low-carbon and low-alloy steels

SOURCE: Avtomaticheskaya svarka, no. 3, 1966, 50-52

TOPIC TAGS: welding electrode, carbon dioxide, welding technology, welding electrode, weld evaluation / PP-AN4 welding electrode

ABSTRACT: The PP-AN4 powdered-metal wire electrode (diameter 2.5 and 2.0 mm) was developed to improve the effectiveness of semiautomatic CO_2-shielded welding. The new electrode is treated with slag-forming components and deoxidizing agents which, combined with the extra protection provided by the CO_2 atmosphere, makes it possible to satisfactorily deoxidize the metal of the weld pool, intensively treat it with slag and reduce its gas content. The presence of Fe powder in the electrode core makes it possible to perform welding at higher current densities and at a faster rate. The welding is based on reversed-polarity direct current. Mechanical tests and metallographic examinations show that weldments of low-alloy steels 09G2 and 10G2SD welded

Card 1/2 UDC: 621.791.856.046

L 28481-66

ACC NR: AP6010143

0

with PP-AN4 electrode display high plasticity even at -70 and -90°C. T-beams welded with this electrode displayed no crystallization cracks in the weld fillet. Pilot industrial tests of the PP-AN4 powdered-metal wire electrode have confirmed its high qualities and productivity. The use of this electrode assures defect-free welds of satisfactory shape, low oxidation and spatter losses, and easy separability of slag crust. Orig. art. has: 5 figures, 4 tables.

SUB CODE: 11, 13/ SUBM DATE: 16Sep65/

Card 2/2 CC

POKHODNYA, I.K.; KOSTENKO, B.A.

Melting of the electrode metal and its interaction with slag during the process of welding under flux. Avtom. svar. 18 no.10:16-22 O '65. (MIRA 18:12)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

MADATOV, N.M., inzh.; POKHODNYA, I.K., kand. tekhn. nauk; KOSTENKO, B.A., inzh.

High-speed radiography of an underwater welding arc. Svar. proizv. no.9:37 S '65. (MIRA 18:9)

1. Institut elektrosvarki imeni Ye.O.Patona AN UkrSSR.

POKHOLNYA I.K.; MARCHENKO, A.Ye.; KOSTENKO, B.A.

Duration of the interaction of the liquid electrode metal with slag and gases during welding. Avtom. svar. 18 no.5:8-10 My '65. (MIRA 18:6)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

MARCHENKO, A.Ye.; POKHODNYA, I.K.; ASNIS, A.Ye.; BEYNISH, A.M.

Strength of welded joints in 09G2 steel. Avtom. svar. 17 no.7:20-24 Jl '64. (MIRA 17:8)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

L 1303-66 EWT(d)/EWT(l)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWP(l)/
EED(b)-3/EWA(c)/
ACCESSION NR: AP5022352 ETC(m) LJP(c) UR/0135/65/000/009/0037/0037
JD/WW/RM 621.791.75.01:621.386.8

61
58
B

AUTHOR: Madatov, N. M. (Engineer); Pokhodnya, I. K. (Candidate of technical sciences); Kostenko, B. A. (Engineer)

TITLE: High-speed cineradiography of the welding arc underwater

SOURCE: Svarochnoye proizvodstvo, no. 9, 1965, 37

TOPIC TAGS: X ray photography, arc welding, welding electrode, underwater welding

ABSTRACT: A setup for high-speed cineradiography of the underwater welding arc is described for the case of bead forming on the rib of a steel plate placed in an aluminum water tank equipped with inlet and outlet cocks for the replacement of water and with illuminating lamps. This beading was performed with the aid of unit electrodes as well as of thin-wire electrodes. Radiography of the beading was carried out with the aid of a TUR-1000 apparatus under the following conditions: anode current, 160 ma; anode voltage, 115 kv; photographing time, 1.5 sec; photographing rate, 750-1000 frames/sec; distance from tube to electrode,

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300 mm. Despite the presence of a strongly scattering medium -- water -- images with adequate contrast were obtained with respect to the terminal, electrode, drop, plate (specimen), and the steam-gas bubble. This high-speed cineradiography of the underwater arc has made it possible to establish a number of parameters of the underwater welding process. In particular, it was found that the steam-gas bubble around the arc under water is relatively immobile and its oscillations obey a cyclic law. The bubble grows from the minimum up to a critical maximum beyond which it is destroyed and almost completely floats to the surface. Contrary to the traditional concept, it was found that tiny gas bubbles do not separate from this bubble. The transfer of metal in the arc during underwater welding proved to differ sharply depending on whether unit electrodes or thin-wire electrodes were used: in the first case the transfer of metal occurred continuously, as a rule, whereas in the second case (thin-wire electrode) transfer occurred in the form of large drops with a diameter 2-3 times as large as the electrode diameter. In short, cineradiography of the underwater welding arc is a highly promising technique which should be further improved and refined. Orig. art. has: 3 figures.

L 1303-66

ACCESSION NR: AP5022352

3

ASSOCIATION: IES im. Ye.O. Patona 44,55

SUBMITTED: 00 ENCL: 00 SUB CODE: IE, OP

NO REF SOV: 001 OTHER: 000

Card 3/3

PATON, B.Ye.; POKHODNYA, I.K.

Welding science and technology in Japan. Avtom. svar. 18 no.5:70-76 My '65. (MIRA 18:6)

POKHODNYA, I.K.; MARCHENKO, A.Ye.

Hydrogen in welded joints made by electrodes with a rutile coating. (MIRA 17:11)
Avtom. svar. 17 no.5:40-46 My '64.

1. Institut elektrosvarki imeni Patona AN UkrSSR.

POKHODNYA, I.K.; MARCHENKO, A.Ye.; YAVDOSHCHIN, I.R.

Standard, low-toxicity, ANO-3 and ANO-4 electrodes. Avtom. svar. 17 no.8:11-18 Ag '64.

(MIRA 17:11)

1. Institut elektrosvarki imeni Patona AN UkrSSR.

POKHODNYA, I.K.

Method of investigating the electrode metal melting and transfer process during welding. Avtom. svar. 17 no.2:1-9 F '64.
(MIRA 17:9)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

DUDKO, D.A.; POKHODNYA, I.K.

Getting acquainted with United States welding techniques. Avtom. svar. 17 no.1:82-88 Ja '64. (MIRA 17:3)

POKHODNYA, I.K.; REYNISH, A.M.; MARCHENKO, A.Ye.

Highly productive low-toxicity ANC-1 electrodes. Avtom. svar. 15 no.3:19-26 Mr '62. (MIRA 15:2)

1. Ordena Trudovogo Krasnogo Znameni institut elektrosvarki imeni Ye.O. Patona AN USSR.
(Electrodes--Testing)

POKHODNYA, I.T., inzh.

Manufacture of piston rings under conditions of the serial production of compressors. Khim.mashinostr. no.2:36-37 Mr-Ap '63. (MIRA 16:4)
(Piston rings) (Compressors)

POKHODUN, Timofey Dmitriyevich; KARELIN, V.F., retsenzent; POKHVALOV, Ye.P., retsenzent; RYBALKO, B.V., nauchn. red.; VLASOVA, Z.V., red.

[Standardization in shipbuilding] Standartizatsiia v sudostroenii. Leningrad, Sudostroenie, 1965. 179 p. (MIRA 18:7)

POKHODYUCHIY,N. brigadir prokhodchikov

The section has become progressive. Mast. ugl. 4 no.4:4 Ap '55.
(Donets Basin--Coal mines and mining) (MLRA 8:6)

KALUZHNIN, Lev Arkad'yevich, doktor fiziko-matematicheskikh nauk; GLUSHKOV, V.M., otv. red.; POKHODZILO, P.V., red.; MATVIYCHUK, A.A., tekhn. red.

[What is mathematical logic] Chto takoe matematicheskaia logika; Kiev, 1961. 39 p. (Obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii Ukrainskoi SSR. Ser.6, no.12) (MIRA 14:11)
(Logic, Symbolic and mathematical)

POKHODZILO, Petr Vasil'yevich; DYACHKO, I.P., red.; MARTINYUK, K.P., tekhn.red.

[Attention! these are automatic machines] Uvaha! Avtomaty. Kyiv, Kyivs'ke obl.knyzhkovo-gazetne vyd-vo, 1960. 18 p. (MIRA 14:1)

(Automatic control)

MESHKOVSKIY, G. A., inzh.; POKHODZILO, V. M., inzh.

Joint session of the Department of Technical Sciences of the Academies of Science of the U.S.S.R. and the Ukrainian S.S.R. Met. i gornorud. prom. no.1:78-80 Ja-F '63. (MIRA 16:4)

(Mining engineering--Congresses)
(Metallurgy--Congresses)

TIMOFEYEV, V.A., inzh.; MESHKOVSKIY, G.A., inzh.; POKHODZILO, V.N., inzh.

Technical and economic analysis of ore haulage in Krivoy Rog Basin mines. Met. i gornorud. prom. no.6:40-44 N-D '62. (MIRA 17:8)

1. Nauchno-issledovatel'skiy gornorudnyy institut, Krivoy Rog (for Timofeyev).

BAKHTIN, B.T.; POKHODZILO, V.N.

Seminar on boring and blasting operations in open-pit mines.
Met.i gornorud.prom. no.5:87 S-O '62. (MIRA 16:1)
(Strip mining) (Blasting)

MESHKOVSKIY, G.A., inzh.; POKHODZILO, V.N., inzh.

Creating new machinery for coal and metal mining. Met.i gornorud. prom. no.5:87 S-O '62. (MIRA 16:1)
(Mining machinery)

KESSENIKH, R.M.; SOTNIKOV, V.G.; TRIPEL', V.G.; PETROV, A.V.; POKHOLKOV, Yu.P.; SHUMILOV, Yu.N.

Some electrophysical properties of the homolog series of novolak-type phenol-formaldehyde resins. Izv. TPI 126:26-35 '64. (MIRA 18:7)

ACC NR: AP7013136 SOURCE CODE: UR/0139/66/000/006/0141/0143

AUTHOR: Kessenikh, R. M.; Pokholkov, Yu. P.; Petrov, A. V.

ORG: Tomsk Polytechnical Institute im. S. M. Kirov (Tomskiy politekhnicheskiy institut)

TITLE: Peculiarities of thermal aging of epoxide compound of hot hardening

SOURCE: IVUZ. Fizika, no. 6, 1966, 141-143

TOPIC TAGS: thermal aging, epoxy resin, phthalic anhydride, hardening, thermal stability

SUB CODE: 11,07

ABSTRACT: It has been established for some time that with such dielectrics as polystyrol, polyethylene-terephthalate, and others which have bulky groups in their structures such as a benzene ring, $COOCH_3$ group, etc, the dependence of the specific resistance on the temperature passes through a minimum in the region of the temperature of vitrification. A minimum temperature for the specific resistance of polymers is explained by superimposing the polarization current on the conductance current (B. I. Sazhin; "Dependence of Electric Conductance of Polymers on the Temperature;" Vysokomolekulyarnyye Soyedineniya No 6, 1961).

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ACC NR: AP7013136

In this article, the authors discover similar laws governing the hot hardening of an epoxide compound containing 100 parts by weight of ED-6 resin and 60 parts by weight of phthalic anhydride. The hardening took place over a 24-hour period at a temperature of 140°C. Thermal stability of the compound obtained was 120°C. A minimum temperature was found for the specific resistance of a pure thermo-reactive epoxide compound which shifted into the region of higher temperatures as the aging continued. Orig. art. has: 2 figures.
[JPRS: 40,207]

Card 2/2

L 62175-65 EPA(s)-2/EWT(m)/EWP(j) Pc-4/Pt-7 JAJ/RM

ACCESSION NR: AP5014691 UR/0191/65/000/006/0039/0041
678.01:537.311:66.083

AUTHOR: Kessenikh, R.M.; Pokholkov, Yu. P. 31 B

TITLE: Effect of low pressures on the electrical conductivity of polymers

SOURCE: Plasticheskiye massy, no. 6, 1965, 39-41

TOPIC TAGS: electric conductivity, polymer electrical property, polystyrene, carbazole polymer, low pressure resistivity, charge carrier concentration

ABSTRACT: The subjects of this study were polystyrene, polymonochlorostyrene, polydichlorostyrene, and a carbazole-base polymer. The measurements were made at atmospheric pressure and 4×10^{-5} mm Hg at 20-150C. All the curves plotted for the temperature dependence of the volume resistivity ρ_v,

$$\log \rho = f\left(\frac{1}{T}\right)$$

showed the presence of three portions, which are interpreted in terms of polarization effects. The resistivity of the polymers in a vacuum is one order of magnitude less than

Card 1/2

L 62175-65

ACCESSION NR: AP5014691

at atmospheric pressure. When the relation $\log \rho v = f\left(\frac{1}{T}\right)$ is compared for a series of polymers with increasing polarity (polystyrene → polydichlorostyrene → polymonochlorostyrene → poly-3-vinyl-9-ethylcarbazole), the following relationship is observed: as the polarity increases, the minimum of ρv in a vacuum becomes less pronounced than the minimum at atmospheric pressure. Apparently, this is because in the more polar polymers the concentration of the charge carriers is higher; as a result, the residual conduction current is superimposed on the displacement current, and the minimum becomes diffuse. This effect was observed only under vacuum conditions, when the structure of the polymer was "loose." The observed effect of a vacuum on the electrical conductivity of thermoplastic linear polymers is particularly apparent at high temperatures. Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, EM

NO REF SOV: 005 OTHER: 001

Card 2/2

POKROVSKOV, YU.

Electric Meters

Electrician's MP-4 device. Radio No. 4, 1953.

9. **Monthly List of Russian Accessions**, Library of Congress, June 1953. Unclassified.

Pakhomova, K.S.

USSR / Analytical Chemistry. Analysis of Inorganic Subtances. G-2

Abs. Jour: Referat. ZHUR. KHIMIYA, NO. ', 1957, 27231 K.

AUTHOR : V.G. SOCHEVANOV, G.A. VOLKOVA, L.P. VOLKOVA,
L.T. MARTYNOVA, K.S. PAKHOMOVA, T.P. POPOVA
A.A. ROZBIANSKAYA, G.V. ROZOVSKAYA, N.V. SHMAKOVA

TITLE : Methods of chemical analysis of Mineral Raw Materials.

ORIG. PUB: Gosgeoltekhizdat, 1956, 100 str.

Abstract: no abstract.

POKHORELKO, I. P.; Shcherba, F. I.

"Method of Treatment of Tuberculosis in the Bladder with Streptomycin and Electrophoresis"

Urological Dept., S.P. Botkin Hospital Moscow;
Sov Med Vol 9, Sep 54, Moscow

Comment
K-3280, 14 Mar 55

POKHORILER, V.L., inzh.

Calculation of temperature caused deformations of steam turbine cylinders during cooling. Teploenergetika 12 no.11:46-50 N '65.
(MIRA 18:10)

1. Ural'skoye otdeleniye Gosudarstvennogo tresta po organizatsii i ratsionalizatsii rayonnykh elektrostantsiy i setey.

POKHOROV, S.A., inzhener.

Approximate calculation of the specific consumption of heat for large turbine installations. Teploenergetika 3 no.3:56-58 Mr '56. (Steam turbines)

POKHOROVSKIY, A.D.; KOGAN,Z.Ye, inzhener, retsenzent; KOLLI,A.Ya., inzhener, redaktor; POPOVA,S.M., tekhnicheskiy redaktor

[Reading devices in coordinate boring machine tools; construction, adjusting, and repair] Otschetnye mekhanizmy koordinatno-rastochnykh stankov; tekhnologiia, nastroika i remont. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroitel'noi lit-ry, 1955. 127p. (MLRA 9:3)
(Machine tools)

POKHOROVSKIY, A.D.

USSR/Engineering - Machine tools

Card 1/1 Pub. 103 - 2/29

Authors : Pokhorovskiy, A. D.

Title : Methods for securing the accuracy of jig borers

Periodical : Stan. i instr. 10, 5-9, Oct 1954

Abstract : A narrative report is given on checking and adjusting boring jigs to a degree of accuracy that would permit boring with a minimum amount of fittings. Illustration; diagrams; drawings.

Institution : ...

Submitted : ...

POKHOROVSKIY, A. D.

Author of article - CYLINDRICAL SCALES FOR JIG BORING MACHINES--Moscow, Stanki i Instrument, January 1954.

Sum 179, 11 Aug 54

POKHOVSKAYA, T.A.

Immunization of mice with tumors passed on chick embryo chorioallantois. Biul. eksp. biol.i med. 50 no.12:72-75 D '60. (MIRA 14:1)

1. Iz laboratorii neinfektsionnoy immunologii (zav. - prof. I.N. Mayskiy) Instituta eksperimental'noy biologii (dir. prof. I.N. Mayskiy) AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR N.N. Zhukovym-Verezhnikovym.
(TUMORS)

POKHOZHAYEV, S.I.

Eigenfunctions of the equation $\Delta u - \lambda f(u) = 0$. Dokl. AN SSSR 165 no.1:36-39 N '65. (MIRA 18:10)

1. Moskovskiy energeticheskiy institut. Submitted March 25, 1965.

POKHOZHAYEV, S. I.

Studies of Mechanics and Applied (Cont.) 1035
Mathematics, Moscow, Oborongiz, 1958, 218pp. (ed. Sokolovskiy, V. V.)
modulus of elasticity of KAST-V; 7) Stress-strain relationship of KAST-V for different directions in the temperature function; 8) Dependence of the modulus of elasticity of KAST-V on temperature for various directions. 9) The value of Poisson's ratio for KAST-V in temperature function for various directions.

Moiseyev, N.N., Doctor of Physical and Mathematical Sciences. 145
Oscillations of a Body Floating in a Bounded Reservoir.
The article contains the following sections: Introduction; 1) Potential of velocities; motion equation. Mathematical statement of a problem; 2) General properties of the solution of the system (1.16); 3) Some remarks on the effective determination of principal oscillations; 4) Supplements and generalizations.

Pokhozhayev, S.I. A Problem of Supersonic Flow 167
The article contains the following sections: Introduction; 1) Interaction of centered waves; 2) Reflection from a

Card 5/6

DERIBAS, A.A.; POKHOZHAYEV, S.I.

Problem of a strong explosion on the surface of a liquid. Dokl. AN SSSR 144 no.3:524-526 My '62. (MIRA 15:5)

1. Institut gidrodinamiki Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom M.A.Lavrent'yevym.
(Explosions) (Hydrodynamics)

SOV/124-59-10-11450

Translation from: Referativnyy zhurnal, Mekhanika, 1959, No. 10, p. 53 (USSR)

AUTHOR: Pokhozhayev, S. I.

TITLE: One Topic of the Supersonic Outflow

PERIODICAL: Tr. Mosk. fiz.-tekhn. in-ta, 1958, No. 1, pp. 167-172

TEXT: A supersonic plane ideal gas jet flows out from a nozzle with parallel walls into an immovable medium having a lowered pressure p_2. The solution was expanded in a power series of a small parameter $\varepsilon = (p_1 - p_2)/p_1$, where p_1 is the pressure at the nozzle outlet section; the terms containing ε at a power not higher than two are preserved in calculation. The rarefaction waves originated by the nozzle edges are discussed, and it is proved by the equation of the free jet surface found out by Lin (Lin, C. C., J. Math. and Phys., 1954, Vol. 33, No. 2, pp. 117-134), that the waves convergent after reflection are not symmetrical to the divergent waves. Therefore, it is concluded that jumps in density within the jet may arise at sufficiently small ε values. The same conclusion was obtained by the other more accurate G.-A.-Dombrovskiy-method in case $\varepsilon = 0$ (Dokl. AN SSSR, 1957, Vol. 113, No. 1, pp. 58-61 - RZhMekh, 1958, No. 5, 5115).

Card 1/1

M. I. Gurevich

84678

S/020/60/134/004/001/023
C111/C222

16.3500

AUTHOR: Pokhozhayev, S.I.

TITLE: Dirichlet Problem for the Equation $\Delta u = u^2$

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol.134, No.4, pp.769-772

TEXT: Beside of the boundary value problem

(1) $\Delta u = u^2$

in the domain G; $u = \varphi(s)$ on the boundary Γ of G, the author considers the equation

(2) $$u(p) = -\int_G K(P,Q)u^2(Q)dQ+v(P),$$

where G is a bounded domain of the n-dimensional space; K(P,Q) is the Green's function of the Dirichlet problem for G; P,Q are points of G and v(P) is a function harmonic in G which on Γ assumes the prescribed continuous values $\varphi(s)$.

Card 1/3

S/020/60/134/004/001/023
C111/C222

Dirichlet Problem for the Equation $\Delta u = u^2$

Let $K_1 = \max_{P \in G} \int_G K(P,Q)dQ$, $B = \max_{P \in G} |v(P)|$.

Theorem 1: If $4BK_1 < 1$, then there exists a unique solution of (2) which satisfies the condition

(3) $$|u(P)| \leq \frac{1-\sqrt{1-4BK_1}}{2K_1}$$

The proof uses the successive approximations $u_k(P) = \int_G K(P,Q)u_{k-1}^2(Q)dQ + v(P)$; $u_0(P) = v(P)$ and the principle of the contracting mapping. The limit function $u(P)$ is a solution of (1).

Theorem 2: For every non-negative continuous function $\varphi(s)$, $\Delta u = u^2$ has a non-negative solution in G which on Γ assumes the values $\varphi(s)$.

Card 2/3

POKHOZHAYEV, S. I.

Cand Phys-Math Sci - (diss) "Study of boundary problem for the equation $\Delta u - u^2$." Novosibirsk, 1961. 10 pp; (Academy of Sciences USSR, Siberian Division, Joint Academic Council for Physics-Mathematics and Technical Sciences); 250 copies; price not given; bibliography on pp 9-10 (10 entries); (KL, 6-61 sup, 195)

89722

S/020/61/136/003/005/027
C 111/ C 333

16.3400
AUTHOR: Pokhozhayev, S. I.

TITLE: Analogue of Schmidt's Method for Nonlinear Equations

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 3, pp. 546-548

TEXT: The author considers the equation

$$(1) \quad u(P) = \iint_D K(P,Q)\, u^2(Q)\,dQ + \psi(P)$$

which arises in the boundary value problem

$$(2) \quad \Delta u + u^2 = 0, \quad u\big|_\Gamma = f(s),$$

where Γ is the boundary of a two-dimensional bounded domain D for which there exists the Green function $K(P,Q)$ of the Dirichlet problem. The problem (2) is considered in the class of functions $C^{(2)}$. Only continuity is demanded for f(s).

For the solution the author applies an analogue of the method of E. Schmidt (Ref.1).

Card 1/4

Analogue of Schmidt's Method for Nonlinear Equations

The kernel of (1) is represented in the form

(6) $K(P,Q) = M_n(P,Q) + \Gamma_n(P,Q)$,

where

$$M_n(P,Q) = \sum_{k=1}^{n} \frac{\varphi_k(P)\,\varphi_k(Q)}{\lambda_k};$$

$\varphi_k(P)$ and λ_k are eigenfunctions and eigen values of the boundary value problem

(4) $\Delta\varphi + \lambda\varphi = 0, \quad \varphi|_\Gamma = 0$.

Let

$$\gamma_n = \max_D \iint_D |\Gamma_n(P,Q)\, dQ .$$

Theorem: There exists a number n and a nonlinear operator $P[V(P)]$ so that all the solutions $U(P)$ of (1) are representable in the form

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C 111/ C 333

Analogue of Schmidt's Method for Nonlinear Equations

$$U(P) = V(P) + R\left[V(P)\right],$$

where $V(P)$ is the solution of the integral equation with a fixed degenerated kernel $M_n(p,Q)$

$$(7)\quad V(P) = \iint_D M_n(P, Q)(V(Q) + R\left[V(Q)\right])^2 dQ$$

which satisfies the condition:

$$(8)\quad \gamma_n \max_D |V(P)| < 1/4 .$$

Corollary: The number of solutions of (2) is determined by the number of those solutions of (7) which satisfy (8).

The operator $R\left[V\right]$ depends on n and $\max_D |R\left[V(P)\right]| \to 0$ for $n \to \infty$ for fixed function $V(P)$.

The author thanks L. V. Ovsyannikov for advices.

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89722

S/020/61/136/003/005/027
C 111/ C 333

Analogue of Schmidt's Method for Nonlinear Equations

There is 1 non-Soviet reference.

[Abstracter's note: (Ref.1) is a paper of E. Schmidt in Math. Ann., 1907, 64, 161].

ASSOCIATION: Institut gidrodinamiki Sibirskogo otdeleniya Akkademii nauk SSSR (Institute of Hydrodynamics of the Siberian Department of the Academy of Sciences USSR).

PRESENTED: August 22, 1960, by M. A. Lavrent'yev. Academician

SUBMITTED: August 18, 1960

Card 4/4

S/020/61/138/002/007/024
C111/C222

1/2.3500

AUTHOR: Pokhozhayev, S.I.

TITLE: Boundary value problem for the equation $\Delta U = U^2$

PERIODICAL: Akademiya nauk SSSR. Doklady, v.138, no.2, 1961, 305-308

TEXT: The author considers the problem

$$\Delta U = U^2 \quad , \quad U|_{\Gamma} = \varphi(s) \tag{1}$$

for two times continuously differentiable real functions $U(x,y)$; Γ is the boundary of a bounded region G ; $\varphi(s)$ is continuous.
Let $K(P,Q)$ be the Green's function of the operator $L(U) = \Delta U - qU$, where $q(x,y)$ has continuous derivatives of first order ; P and Q are points of G. Let the equation

$$\psi(P) = \lambda \int_G K(P,Q)\psi(Q)dQ$$

have only positive eigenvalues.
Theorem 1 : There exists a μ so that the integral equation

$$\mu V(P) = \int_G K(P,Q)V^2(Q)dQ \tag{2}$$

Card 1/3

Boundary value problem ....

has a nontrivial solution.

Theorem 2 : The boundary value problem (1) with $\varphi \equiv 0$ has a nontrivial solution.

Let $K_o(P,Q)$ be the Green's function of the Laplace operator for G. Let

$$\max_G \int_{\bar{G}} K_o(P,Q)dQ = K_1 \quad ; \quad \max_{\Gamma} |\varphi(s)| = B$$

Theorem 3 : If a) $\varphi(s) \geqslant 0$ or b) $4BK_1 < 1$ then (1) has two different solutions.

Lemma : There exists a constant C_* so that the boundary value problem for the circle $r \leq R$

$$\Delta V = V^2 \quad , \quad V(R) = C \qquad (5)$$

has a solution if $C \geqslant C_*/R^2$, and has no solution of $C < C_*/R_2$.

From theorem 2 it follows that in $\bar{G}$ there exists a solution $V(P)$ of $\Delta V = V^2$ which assumes negative values $\psi(s)$ on Γ.

Theorem 4 : If $\varphi(s)$ is so that $\psi(s) \leq \varphi(s) \leq 0$ then (1) has a solution.

Card 2/3

Boundary value problem ...

Conclusion : (1) has a solution if $\frac{C_*}{R^2} \leq \varphi(s) \leq 0$, where R - - radius of a circle containing G, and C_* is defined by the lemma. Theorem 5 : (1) has no solution if

$$\varphi(s) < \frac{C_*}{R_0^2}$$, where R_0 is the radius of a circle contained in G, and C_* is defined by the lemma.

The author thanks L.V. Ovsyannikov and mentions M. Vaynberg. There are 3 Soviet-bloc and 1 non-Soviet-bloc references.

ASSOCIATION: Institut gidrodinamiki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Hydrodynamics of the Siberian Department of the Academy of Sciences USSR)

PRESENTED: January 5, 1961, by M.A. Lavrent'yev, Academician

SUBMITTED: December 31, 1960

38124

S/020/62/144/003/009/030
B108/B102

11.8200

AUTHORS: Deribas, A. A., and Pokhozhayev, S. I.

TITLE: Powerful explosion on a liquid surface

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1962, 524-526

TEXT: The problem of the motion of a liquid following a violent explosion on its free surface is considered. In this case, compressibility of the liquid can be neglected. The problem consists in finding a parameter P able to characterize the effect of the explosion on the motion of the liquid; given this, the rest is easy. It is proposed to use the momentum J_0 imparted to the liquid by the explosion as this characteristic parameter P. The problem can then be formulated with the dimensionless coordinates

$$\xi = \left(\frac{\rho_0}{J_0}\right)^{1/3} \frac{x}{\sqrt[3]{t}} \quad \text{and} \quad \eta = \left(\frac{\rho_0}{J_0}\right)^{1/3} \frac{y}{\sqrt[3]{t}} .$$

Experiments in which the process of the explosion was tracked by rapid filming showed that the use

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POKHOZHAYEV, Vladimir Davidovich; KRAINSKIY, A.I., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[Experience with three-dimensional models in the deisgn of complex industrial units]Opyt primeneniia ob"emnogo maketirovaniia pri proektirovanii slozhnykh promyshlennykh komplektov. Leningrad, 1962. 6 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Seriia: Ekonomika i organizatsiia proizvodstva, no.5) (MIRA 16:3)

(Engineering models)

POKHOZHAYEV, V.D.

Depth of reprocessing or the coefficient of utilization of the raw material. Neft. khoz. 32 no.7:61-64 Jl '54. (MLRA 7:8)
(Petroleum--Refining)

POKHOZHAYEV, V. D.

Subject : USSR/Chemistry AID P - 550

Card 1/1 Pub. 78 - 16/29

Author : Pokhozhayev, V. D.

Title : The "depth" of processing and coefficient of utilization of crude oil

Periodical : Neft. Khoz., v. 32, #7, 61-64, Jl 1954

Abstract : General discussion of the concept of "possibility of extension" in the refining processes for fuels and lubricants. The use of the Russian terms for "depth", "deeping" and "complete" is analysed for various processes such as distillation, rectification, cracking, hydrogenation, etc.

Institution : None

Submitted : No date

S/065/60/000/007/003/008/XX
E194/E484

AUTHORS: Pokhozhayev, V.D., Zaglodin, L.S., Golov, G.S. and Kul'chitskaya, I.V.

TITLE: The Principles of the Rational Use of Hydrogen in Processes of the Hydrodesulphurization of Engine Fuels

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No.7, pp.1-6

TEXT: The output of high sulphur crudes is increasing and accordingly there is increasing demand for hydrosulphurization. Work on the development of a practical industrial hydrodesulphurization process for crude and distillates is being carried on in a number of research institutes including the All-Union Research Institute of the Petroleum Industry and the Groznyy Scientific Research Institute. The first plant has been developed by the design institute Giproneft' on the basis of data supplied by the All-Union Scientific Research Institute of the Petroleum Industry. A hydrodesulphurizing plant is operating successfully on an oil refinery. The process is being further developed by the Lengiprogaz Institute. Distillates are hydrofined on aluminium-cobalt-molybdenum catalyst in the presence of hydrogen at a temperature of 340 to 420°C and pressures

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E194/E484

The Principles of the Rational Use of Hydrogen in Processes of the Hydrodesulphurization of Engine Fuels

from 20 to 50 atm using the circuit shown in Fig.1. The procedure is described. Use of hydrodesulphurization is limited by lack of hydrogen and possible sources of hydrogen on refineries are discussed. The hydrogen content of available gas varies considerably depending upon the method of production. The hydrogen content of the gas also varies during the actual process of hydrodesulphurization as the hydrogen is used up and must be replaced part way down the circuit. Analyses of circulating gas are given in Table 1 and curves of the consumption of 100% hydrogen as function of its content in the circulating gas and discharge from the first reactor are given in Fig.2. Reaction and ballast gases accumulate in the circulating gas and the concentration of hydrogen falls. It is accordingly necessary to extract part of this circulating gas and to replace it by gas containing hydrogen. This increases the hydrogen consumption because the used circulating gas is used for fuel. In developing technological circuits for hydrodesulphurization of various petroleum fractions, the specific properties of the individual feed stocks should be considered in relation to the

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ASPEL', N.B.; GOLOV, G.S.; POKHOZHAYEV, V.D.

Some characteristics of industrial plants for the catalytic reforming process. Khim.i tekh.topl.i masel 5 no.5: 1-7 My '60. (MIRA 13:7)

1. Lengiprogaz.
(Petroleum refineries—Equipment and supplies)

POKHOZHAYEV, V.D.; KISELEVA, E.A.; ASPEL', N.B.

Ways of increasing the octane numbers of automobile gasolines. Khim.i tekh. topl.i masel 6 no.2:5-10 F '61. (MIRA 14:1)

1. Lengiprogaz.
(Gasoline—Antiknock and antiknock mixtures)

POKHODZILO, Petr Vasil'yevich; VELICHKO, Yu.T., doktor tekhn. nauk, prof., retsenzent; IVANOV, A.A., kand. tekhn. nauk, dots., otv. red.; YAROTSKIY, V.D., red.

[Development of basic methods and techniques in radio measurements; an historical and technical account] Razvitie osnovnykh metodov i tekhniki radioizmerenii; istoriko-tekhnicheskii ocherk. Kiev, Izd-vo "Naukova dumka," 1964. 285 p. (MIRA 17:6)

POKHSRARYAN, M.S.; SANOYAN, V.G.

Hydrodynamic calculation of flat flow with a side outlet. Izv. AN Arm. SSR. Ser. fiz.-mat. nauk 10 no.6:25-40 '57. (MIRA 11:2)

1. Vodno-energeticheskiy institut AN ArmSSR.
(Stream measurements)

POKHSRARYAN, M.S.

POKHSRARYAN, M.S.

Nonscouring speed of streams. Izv.AN Arm.SSR. Ser.tekh.nauk 10 no.6:85-89 '57. (MIRA 11:2)

1.Vodno-energeticheskiy institut AN ArmSSR.
(Hydraulics)

POKHSRARYAN, M.S.

Cross sections of real channels. Izv.AN Arm.SSR.Ser.tekh.nauk 11 no.6: 31-38 '58. (MIRA 12:3)

1. Vodno-energeticheskiy institut AN Arm.SSR.
(Canals)

AUTHOR: Pokhsraryan, M. S.

20-119-2-10/60

TITLE: The Problem of the Damping of Transverse Circulation (K voprosu o zatukhanii poperechnoy tsirkulyatsii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 2, pp 233-236 (USSR)

ABSTRACT: The natural circulation occuring in the curved ranges of river beds is more and more reduced in the straight part of the canal. The transverse velocities become so small at a certain distance behind the bend that the flow can be practically regarded as laminar. The present work determines the rule of the reduction in those ranges where the factors causing the circulation are absent. The circulation in the range immediately behind the bend is made a condition. The author starts from the equations of motions of a viscous incompressible liquid and from the equation of continuity with constant coefficients of turbulent intermixing. The longitudinal velocities are taken as constant and the pressure is to satisfy the hydrostatic rules. In first approximation

the nonlinear terms in the equations of motion can be neglected. These equations are solved by means of the method of separation of the variables and the expressions found this way are mentioned in detail. The following limiting conditions for the determination of the arbitrary constant exist: a) Incompressibility of the lateral surfaces, and b) The disappearing of the tangential stresses at the bottom and the free surface of the flow. Then conditions are given for the vertical component of velocity. The found expressions for the transverse velocities are put down. The coefficient of turbulent intermixing is for the qualitative analysis of the obtained solution expressed by the empirical formula A. V. Karaushev (reference 1). The coefficients occurring in this formula are shortly discussed. The expressions obtained show that the rules for the reduction of the circulation depends on the geometrical dimensions of the canal and on its roughness. There are 2 figures and 5 references, 5 of which are Soviet.

The Problem of the Damping of Transverse Circulation 20-119-2-10/60

PRESENTED: October 22, 1957, by L. I. Sedov, Member, Academy of Sciences USSR

SUBMITTED: September 14, 1957

AVAILABLE: Library of Congress

Card 3/3

POKHSRARYAN, M.S.

Damping of transverse circulation in a straight channel. Izv. AN Arm.SSR.Ser.tekh.nauk. 12 no.1:19-29 '59. (MIRA 12:4)

1. Vodno-energeticheskiy institut AN Arm.SSR.
(Fluid mechanics)

ANAN'YAN, A.K., doktor tekhn. nauk, prof.; BEK-NAZARCHEV, B.I., kand. geogr. nauk; ZHAMAGORTSYAN, V.N., kand. tekhn. nauk; CHITCHYAN, A.I., kand. sel'khoz. nauk; YEDIGARYAN, Z.P., mlad. nauchnyy sotr.; SATIAN, M.A., kand. geol.-mineral. nauk; PAYRAZYAN, V.V., mladshiy nauchnyy sotr.; VEBER, V.V., prof.; NAZARYAN, A.G., kand. tekhn. nauk; POKHSRARYAN, M.S., mladshiy nauchnyy sotr.; TER-ASTVATSATRYAN, M.I., mladshiy nauchnyy sotr.; VELIKANOV, M.A.; VELIKANOV, M.A., otv. red.; SHTIBEN, R.A., red. izd-va; KAPLANYAN, M.A., tekhn. red.

[Results of complex research on the Sevan problem] Rezul'taty kompleksnykh issledovanii po Sevanskoi probleme. Erevan, Izd-vo AN Armianskoi SSR. Vol.2. [Channel processes] Ruslovye protsessy. 1962. 255 p. (MIRA 15:7)

1. Akademiya nauk Armyanskoy SSR, Yerivan. Institut vodnykh problem. 2. Chlen-korrespondent Akademii nauk SSSR (for Velikanov).

(Sevan Lake region--Hydrology)

2560
S/044/60/000/011/010/019
B247/B305

3,5135 (1462)
9,6110

AUTHOR: Pokhunkov, A. A.

TITLE: Investigating neutral components of the upper atmosphere at altitudes above 100 km

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 11, 1960, 1649-1657

TEXT: A description of a mass-spectrometer for investigating the composition of the atmosphere with some observational results. Data on the presence and degree of gravitational separation can be obtained by measuring the proportions of gases at different altitudes, and a model of the standard atmosphere can be constructed up to 300 - 500 km. Investigations into neutral composition with the aid of a mass-spectrometer above 100 km have been carried out in the USSR since 1958. In the summer of 1959, two experiments were carried out with a rocket-borne radio-frequency, five cascade Bennet's mass-spectrometer, at altitudes of 100 to 200 km. The results of the automatic analysis of the spectrometer were transmitted

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Investigating neutral...

with the aid of a telemetric system and in one experiment recorded with a galvanometer oscillograph; the latter had a sensitivity many times greater than the former. The results of the experiments are discussed. The author's opinion is that above 100 km the presence of a gravitational separation can be inferred from the ratio Ar to N_2. There are 10 figures and 17 references: 9 Soviet-bloc and 8 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: J. W. Townsend, Ir, C. Y. Johnson, J. C. Holmes, E. B. Meadows, Atmospheric composition at Arctic high altitudes, Doklad na Y Assambleye SK MGG, M., 1958 (Report on the Y Assembly SK MGG, M., 1958); E. B. Meadows, J. W. Townsend, Diffusive separation in the winter night-time Arctic upper atmosphere 112 to 150 km. Doklad na Y Assambleye SK MGG, M., 1958 (Report on the Y Assembly SK MGG, M., 1958); S. Y. Johnson, J. P. Heppner, Daytime measurement of positive and negative ion composition to 131 km by rocket-borne spectrometer, J. Geophys. Res., 61, no. 3, 1956; T. C. Wherry, F. W. Karasek, Performance of the non-magnetic radio-frequency mass-spectrometer tube, J. Appl. Phys., 26, 1955.

Card 2/3

29508
S/049/60/000/011/010/012
D247/D305

Investigating neutral...

ASSOCIATION: Akademiya nauk SSSR. Institut prikladnoy geofiziki
(Academy of Science USSR. Institute of Applied Geophysics)

SUBMITTED: March 22, 1960

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26664
S/560/61/000/007/008/010
E032/E514

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3.5120

AUTHOR: Pokhunkov, A.A.

TITLE: Mass spectroscopic studies of the structural parameters of the Earth's atmosphere at heights between 100 and 210 km

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli, No.7. Moscow, 1961, pp.89-100

TEXT: The investigation of the neutral composition of the atmosphere above 100 km was begun in the USSR in 1958 (Pokhunkov, A.A., Ref.5: Izv. AN SSSR, seriya geofiz., No.11, 1649, 1960). These experiments employed a 5-stage radio frequency mass spectrometer of the Bennett type (a modification of which was described by V. A. Pavlenko, M. D. Shutov, M.Ye. Slutskiy, I. E. Rafal'son, G. A. Tsveyman (Ref.6: Pribory i tekhnika eksperimenta, No.6, 89, 1960)). Two launchings were made in July, 1959 in middle latitudes of the USSR The first experiment was carried out 2.5 hours after sunrise and the second during sunrise. During the first experiment, the mass spectrometer recorded peaks at the following mass numbers: 1, 2, 14, 16, 17, 18, 28, 32, 40, 44. The peaks were identified as follows:

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H_1, H_2, N_1, O_1, OH, H_2O, N_2, O_2, Ar, CO_2 and N_2O. In experiment No.2 the efficiency of the ion source was lower by a factor of 6-8 and so the sensitivity of the device was also lower. In this experiment peaks corresponding to the following mass numbers were observed: 14, 16, 18, 28, 32, 40, 44. The identification was the same as above. The H_2O^+ peak dominates the group [H_2O, OH, H_2, H_1]. This peak is probably due to water carried up by the container from atmospheric layers near the Earth's surface. The desorption process is expected to have an exponential form and this is confirmed experimentally. There was no evidence for the presence of neutral helium in either of these experiments and it is concluded that the concentration of helium between 98 and 203 km must be less than 10^8 cm^{-3}. Some of the data for the second group [N_1, O_1, N_2, O_2, Ar, CO_2 and N_2O] are shown in Figs. 7-9. Fig.7 shows the O_1/N_2 ratio as a function of altitude in the first experiment. Fig.8 shows the O_2/N_2 ratio as a function of altitude in the two experiment and Fig.9 shows the $(CO_2 + N_2O)/N_2$ ratio

as a function of altitude for the two experiments. Finally, Fig.10 shows the Ar/N_2 ratio as a function of altitude in the two experiments. The experimental data show that the concentration of atomic nitrogen between 94 and 211 km is not more than 1 or 2% of the concentration of molecular nitrogen. The O_2/N_2 ratio remains roughly constant between 100 and 165 km (Fig.8). The discrepancy between the two experiments in Fig.9 may be due to the time difference or changes in the state of the atmosphere. Finally, the Ar/N_2 ratio appears to be a monotonically decreasing function of altitude. It is found from a consideration of all the ion current ratios that the average molecular weight of the gases inside a spectrometer is a very slow function of altitude.

Acknowledgments are expressed to B. A. Mirtov for interest and discussions, to R. F. Starostina for assistance in the processing of the data and to S. V. Vasyukov for help during the experiments.

There are 11 figures, 1 table and 12 references: 7 Soviet and 5 non-Soviet. The four latest English-language references read as follows: R. Horowitz, H.E. La Gow, J. Geoph. Res., 63,757, 1958; D. R. Bates. Proc. Roy.Soc., A 253, 452,1959; M.Nicolet, J.Geoph. Res., 64, N. 12, 1959; E.B. Meadows, J.W.Townsend. Ann de Geophys., 14, 80, 1958.

Card 3/5

POKHUNKOV, A. A., ISTOMIN, V. G.

"Mass-Spectrometer Measurements of the Atmosphere Composition in the USSR"

Soviet Papers Presented at Plenary Meetings of Committee on Space Research (COSPAR) and Third International Space Science Symposium, Washington, D. C., 23 Apr - 9 May 62.

POKHUNKOV, A. A.

"Gravitational Separation, Composition and Structural Parameters of the Atmosphere at the Altitudes above 100 km"

Soviet Papers Presented at Plenary Meetings of Committee on Space Research (COSPAR) and Third International Space Science Symposium, Washington, D. C., 23 Apr - 9 May 62